

What is claimed is:

1. A photosensitive printing element comprising:

- 5 a) a hollow cylindrical support layer, the hollow cylindrical support layer comprising an actinic radiation absorbing compound uniformly distributed throughout;
- b) at least one layer of photopolymerizable material deposited on the hollow cylindrical support layer; and
- 10 c) a masking layer on top of the at least one layer of photopolymerizable material that absorbs radiation at a wavelength used to polymerize the layer of photopolymerizable material.

2. The photosensitive printing element of claim 1, wherein the hollow cylindrical base layer absorbs between about 85 and about 95 percent of the actinic radiation.

15

3. The photosensitive printing element of claim 1, wherein the hollow cylindrical support layer comprises polyethylene terephthalate.

20

4. The photosensitive printing element of claim 1, wherein the masking layer comprises an ultraviolet radiation absorbing material and a binder.

5. The photosensitive printing element of claim 4, wherein the ultraviolet radiation absorbing material is selected from the group consisting of dark inorganic pigments, carbon black, and graphite.

25

6. A method of making a hollow cylindrical printing sleeve, the method comprising:

- a) providing a photosensitive printing element comprising:
  - i) a hollow cylindrical support layer, the hollow cylindrical support layer comprising an actinic radiation absorbing compound uniformly distributed throughout;
  - 30 ii) at least one layer of photopolymerizable material deposited on the hollow cylindrical support layer; and

- iii) a masking layer on top of the at least one layer of photopolymerizable material that absorbs radiation at a wavelength used to polymerize the layer of photopolymerizable material;
- 5 b) removing portions of the masking layer by exposing the masking layer to laser radiation at a selected wavelength and power;
- c) exposing the layer of photopolymerizable material to actinic radiation through the hollow cylindrical support layer to create a floor layer of polymerized material;
- 10 d) exposing the surface of the cylindrical sleeve to at least one source of actinic radiation to polymerize the portions of the layer of photopolymerizable material revealed during laser ablation of the masking layer; and
- e) developing the photosensitive printing element to remove the masking layer and the unpolymerized portions of the layer of photopolymerizable material to create a relief image on the surface of the photosensitive printing element.

15 7. The method of claim 6, wherein the hollow cylindrical base layer having an actinic radiation absorbing material uniformly distributed throughout absorbs between about 85 and about 95 percent actinic radiation.

20 8. The method of claim 6, wherein the hollow cylindrical support layer is polyethylene terephthalate.

25 9. The method of claim 6, wherein the masking layer comprises a radiation absorbing compound and a binder.

10. The method of claim 9, wherein the radiation absorbing compound is selected from the group consisting of dark inorganic pigments, carbon black, and graphite.

30 11. The method of claim 6, wherein the at least one source of actinic radiation is collimated.

12. The method of claim 6, wherein the at least one source of actinic radiation comprises ultraviolet lamps arranged around the photosensitive printing element, said ultraviolet lamps simultaneously exposing the entire surface of the photosensitive printing element to actinic radiation.

5

13. The method of claim 12, wherein the ultraviolet lamps are collimated by positioning at least one collimator between the ultraviolet lamps and the photopolymerizable printing element, said at least one collimator having first and second opposing major faces and comprising at least one cell that extends from the first major face to the second major face, wherein the at least one collimator is defined by at least one surface that substantially absorbs actinic radiation incident upon the surface and actinic radiation passes through the collimator before reaching the photopolymerizable printing sleeve.

15 14. The method of claim 6, wherein the photosensitive printing element is positioned adjacent to the at least one source of actinic radiation and said photosensitive printing element is rotated about its axis to expose the entire surface of the photosensitive element to actinic radiation from the at least one source of actinic radiation.

20 15. The method of claim 14 wherein the at least one source of actinic radiation is an ultraviolet lamp and said ultraviolet lamp is collimated by positioning a collimator between the ultraviolet lamp and the photopolymerizable printing sleeve, said collimator having first and second opposing major faces and comprising at least one cell that extends from the first major face to the second major face, wherein the collimator is defined by at least one surface that substantially absorbs actinic radiation incident upon the surface and actinic radiation passes from the ultraviolet lamp through the collimator before reaching the photopolymerizable printing sleeve.

16. A method of making a hollow cylindrical printing sleeve, the method comprising:  
30 a) providing a cylindrical photosensitive printing element comprising:  
i) a hollow cylindrical support layer;  
ii) at least one layer of photopolymerizable material deposited on the hollow cylindrical support layer; and

- iii) a masking layer on top of the at least one layer of photopolymerizable material that absorbs radiation at a wavelengths used to polymerize the layer of photopolymerizable material;
- 5 b) removing portions of the masking layer by exposing the masking layer to laser radiation at a selected wavelength and power;
- c) exposing the surface of the cylindrical sleeve to at least one source of actinic radiation to polymerize the portions of the layer of photopolymerizable material revealed during selective laser removal of the masking layer; wherein the at least one source of actinic radiation comprises one or more collimated sources of actinic radiation; and
- 10 d) developing the photosensitive printing element to remove the masking layer and the unpolymerized portions of the layer of photopolymerizable material to create a relief image on the surface of the photosensitive printing element.

15

- 17. The method of claim 16, wherein after step b) and before step c) the layer of photopolymerizable material is exposed to actinic radiation through the hollow cylindrical support layer to create a floor layer of polymerizable material.
- 20. 18. The method of claim 16, wherein the hollow cylindrical support layer has an actinic radiation absorbing compound uniformly distributed throughout;
- 19. The method of claim 18, wherein the actinic radiation absorbing material absorbs between about 85 and about 95 percent actinic radiation.
- 25 20. The method of claim 18, wherein the hollow cylindrical support layer is polyethylene terephthalate.
- 21. The method of claim 16, wherein the masking layer comprises a radiation absorbing compound and a binder.
- 30 22. The method of claim 21, wherein the radiation absorbing compound is selected from the group consisting of dark inorganic pigments, carbon black, and graphite.

23. The method of claim 16, wherein the at least one source of actinic radiation are ultraviolet lamps and the ultraviolet lamps are collimated by positioning at least one collimator between the ultraviolet lamps and the photopolymerizable printing element, 5 said at least one collimator having first and second opposing major faces and comprising at least one cell that extends from the first major face to the second major face, wherein the at least one collimator is defined by at least one surface that substantially absorbs actinic radiation incident upon the surface and actinic radiation passes through the collimator before reaching the photopolymerizable printing sleeve.

10

24. The method of claim 16, wherein the photosensitive printing element is positioned adjacent one source of actinic radiation and said photosensitive printing element is rotated about its axis to expose the entire surface of the photosensitive element to actinic radiation from the one source of actinic radiation.

15

25. The method of claim 24, wherein the one source of actinic radiation is an ultraviolet lamp and the ultraviolet lamp is collimated by positioning at least one collimator between the ultraviolet lamp and the photopolymerizable printing element, said at least one collimator having first and second opposing major faces and comprising at 20 least one cell that extends from the first major face to the second major face, wherein the at least one collimator is defined by at least one surface that substantially absorbs actinic radiation incident upon the surface and actinic radiation passes through the collimator before reaching the photopolymerizable printing sleeve.

25

26. A photosensitive printing element comprising:

- a) a hollow cylindrical support layer, which layer absorbs between 85 and 95 percent of the actinic radiation impinging on its surface;
- b) at least one layer of photopolymerizable material deposited on the hollow cylindrical support layer; and
- 30 c) a masking layer on top of the at least one layer of photopolymerizable material that absorbs radiation at a wavelength used to polymerize the layer of photopolymerizable material.